

ABSTRACT OF THE DISCLOSURE

Refractive index change inducing light UV
outputted from a light source passes a shutter and an
optical system, and then is reflected by a mirror, so
5 as to irradiate an optical fiber by way of a phase
grating mask. A diffracting action of the phase
grating mask generates a (+)first-order light component
and a (-)first-order light component, which interfere
with each other, thereby generating interference
10 fringes with a fringe interval Λ . As the mirror moves
along the z axis, an irradiation position at which the
optical fiber is irradiated with the refractive index
change inducing light UV by way of the phase grating
mask is scanned. While moving the mirror upon
15 irradiation with the refractive index change inducing
light UV, the phase grating mask is vibrated along the
z axis under the action of a piezoelectric device. The
phase or period of vibration varies from scan to scan.